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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,556	12/20/2001	Hiroshi Matsuura	NAGAT43.001AUS	4692

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EXAMINER

VALENCIA, DANIEL E

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,556

Applicant(s)

MATSUURA ET AL.

Examiner

Daniel E Valencia

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-- Th MAILING DATE of this communication appears on th cover sh et with the correspondenc address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment A filed April 29, 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 7.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____.

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DETAILED ACTION

Applicant's communication filed on April 29, 2003 has been carefully studied by the Examiner. In accordance with the response, claim 1 has been cancelled, claims 2-22 have been amended, and new claims 23-25 have been acknowledged. Additionally, Examiner would like to Thank Mr. Nelson for the courtesy extended in the phone interview on July 14, 2003. The response filed April ⁹~~28~~, 2003 (paper No. 5) is fully responsive to the Office Action mailed January 28, 2003 (paper No. 4).

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The titles "Optical Coupling Module" is still not sufficiently descriptive of the present invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Evidence that claim 24 fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in Paper No. 1 (the specification) filed December 20, 2001. In that paper on page 5, line 31, applicant has stated that the "...plastics having a low

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mold shrinkage of 1.0%...", and this statement indicates that the invention is different from what is defined in the claim(s) because claim 24 recites "... shrinkage 0.1%...".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by Hanzawa U.S. Patent No. 5,390,270 (newly cited). Refer to the appropriate drawings or parts of the specification. Regarding claim 23, Hanzawa discloses an optical coupling module (fig. 2, 8, 4, and 10) comprising: at least one optical fiber (5) for receiving or outputting light said optical fiber having one end (on left end of ferrule); an optical element adapted to transmit light to receive the light from the one end of said optical fiber (the second ferrule in the connector; fig 4); and a ferrule made of synthetic resin (col. 4, lines 64-bottom) for supporting the one end of said optical fiber, said ferrule including a body with two end faces, and at least one through hole (fig. 2) formed in the body, the through hole extending between the two end faces and having a first end portion (2d) into which the one end of said optical fiber is received, and a second end portion (2e) being larger than the first end portion.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section

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351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 23-25 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakamura U.S. Patent No. 6,533,469 (newly cited). Refer to the appropriate drawings or parts of the specification. Nakamura discloses a ferrule for connecting optical fibers with all the limitations of the abovementioned claims. Regarding claim 23, Nakamura discloses an optical coupling module (fig. 1-4) comprising: at least one optical fiber (3) for receiving or outputting light said optical fiber having one end (30); an optical element adapted to transmit light to receive the light from the one end of said optical fiber (the second ferrule in the connector; fig 4); and a ferrule made of synthetic resin (col. 3, 45-50) for supporting the one end of said optical fiber, said ferrule including a body with two end faces, and at least one through hole (45) formed in the body, the through hole extending between the two end faces and having a first end portion (11) into which the one end of said optical fiber is received, and a second end portion (45) being larger than the first end portion. Nakamura further discloses that the resin is polyphenylene sulfide, as mentioned in claim 24. Specifically, Nakamura suggest that the ferrule could be polyamide, which is known to be a transparent synthetic resin, as explained in claim 25. As to claim 19, Nakamura's ferrule has two step portions (29).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4, 14-16, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi U.S. Patent No. 5,682,452 (previously cited) in view of Nakamura. Refer to the appropriate drawings or parts of the specification. Takahashi discloses an optical ferrule and coupler (fig. 3 and 6) with a majority of the limitations of the claimed invention including a plurality of fibers held in the ferrule with a pitch that is less than 250um (col. 5, lines 24-30), as mentioned in claims 2-4. Takahashi also shows that the end face of the ferrule is polished at an oblique angle relative to the optical axes of the fiber, as described in claims 14-16. However, the reference is silent as to the material that the ferrule is comprised of.

On the other hand, Nakamura discloses a ferrule with a step portion being parallel to the layout direction of the fibers, wherein the ferrule is made of a well known synthetic resin (col. 3, 45-50), as explained in part of claim 23. Nakamura discloses that it is advantageous to use synthetic resin for the ferrule, because it allows for the ferrule to be made by molding the resin resulting in precise positioning of the through hole (col. 4, lines 48-55). Additionally, both references disclose ferrules for holding fibers for coupling and would therefore be combinable. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use synthetic resin to make the ferrule disclosed by Takahashi.

Claims 2-10, 17, 18, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanzawa in view of Takahashi. Refer to the appropriate drawings or parts of the specification. Hanzawa as applied above, discloses an optical ferrule assembly (fig. 2, 4, 8, and 10) with a majority of the claimed limitations including a jacket made of metal provided around the ferrule (2), as explained in claims 5-7. With reference to claims 8-10, although Hanzawa does disclose the ferrule being formed by insert molding (col. 2, lines 45-52), this is a method limitation in a product claim and has been given no patentable weight. Hanzawa also shows that the ferrule is provided with a disengagement stopper (2e) having at least one portion so formed as to have an outside diameter greater than the inside diameter of the jacket (fig. 8). Referring to claim 21, Hanzawa also shows step portions being parallel to the direction of the fibers (fig. 8). However, Hanzawa fails to disclose the use of multiple fibers disposed in the ferrule.

On the other hand, Takahashi discloses a similar coupling device that teaches the limitations that the Hanzawa reference lacks including ferrule obliquely angled with respect to the fiber axis, as mentioned in claim 18. Additionally, Takahashi's disclosure shows that the ferrule is a quadratic prism (fig. 6), as described in claim 22. Specifically, Takahashi teaches that it is advantageous to dispose more than one fiber in a ferrule (claims 2-4) to be able to switch or multiplex optical signals (col. 1, lines 10-20 and col. 3, lines 5-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the teaching of the Takahashi reference with the device disclosed by Hanzawa to arrive at the claimed invention.

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanzawa and Takahashi in view of Edwards U.S. Patent No 5,751,875 (previously cited). Refer to the appropriate drawings or parts of the specification. Hanzawa and Takahashi as applied above, disclose an optical coupling module with a majority of the limitations of the claimed invention. However, the combination of references does not explicitly state that the ferrule and the jacket have rotation preventing means.

On the other hand, Edwards discloses a similar ferrule structure (fig. 1 and 2) made of synthetic resin; wherein the jacket and the ferrule comprise interlocking rotation preventing means (24, 26,72), as mentioned by claims 11-13. Edwards teaches that it is advantageous to provide rotation-preventing means so that the ferrule will not rotate with respect to the collar such that mating connectors is made easier (col. 6, lines 1-15). One of ordinary skill at the time of invention would have found it obvious to add this advantageous to the device disclose by Hanzawa and Takahashi.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takada U.S. Patent No. 6,447,173 discloses a ferrule for an optical connector especially relevant to claim 23.

Yanagi U.S. Patent No. 5,975,770 discloses a plastic ferrule for optical connectors also especially relevant to claim 23.

Ishibashi U.S. Patent Application Publication No. 2002/0037140 discloses a composite ferrule made of synthetic resin for a connector especially relevant to claim 23.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

The following language of independent claim 23 did not appear anywhere in the previous version of the claims and required a new search, new consideration, and new grounds of rejection:

“...for supporting the one end of said optical fiber, said ferrule including a body with two end faces, and at least one through hole formed in the body, the through hole extending between the two end faces and having a first end portion into which the one end of said optical fiber is received, and a second end portion being larger than the first portion.”

Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

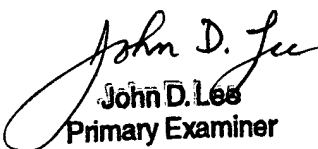
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel E Valencia whose telephone number is (703)-305-4399. The examiner can normally be reached on Monday-Friday 9:30-6:00.

The fax phone numbers for the organization where this application or proceeding is assigned are (703)-308-7724 for regular communications and (703)-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.



DEV
July 17, 2003



John D. Lee
Primary Examiner